REMARKS

In the last Office Action the Examiner rejected claims 1–24 under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent 6,172,365 B1 ("*Hiroi*") in view of U.S. Patent 6,157,087 ("*Zhao*") and in further view of U.S. Patent 5,093,572 ("*Hosono*"). Applicants respectfully traverse the rejection of these claims.

Applicants propose canceling claims 2, 8, and 12 without prejudice or disclaimer of the subject matter contained therein and, accordingly, do not address the Examiner's rejection of those claims.

Although the Examiner purports to reject claims 1, 3–7, 9–11, and 13–24 as unpatentable over *Hiroi* in view of *Zhao*, and in further view of *Hosono*, the Examiner applied only *Hiroi* to claims 1, 3, 4, 11, 13, and 14, applied only *Hiroi* in view of *Zhao* to claims 5, 6, 9, 10, and 15–18, and applied *Hiroi* in view of *Zhao*, and in further view of *Hosono* to claims 7 and 19–24. To permit Applicants to fully respond to the Examiner's rejection of each claim, Applicants request that the Examiner clearly identify the portions of *Zhao* and *Hosono* allegedly being applied to claims 1, 3, 4, 11, 13, and 14 and the portions of *Hosono* allegedly being applied to claims 5, 6, 9, 10, and 15–18.

Proposed Amendment

Applicants propose amending claims 1, 6, 11, and 16 to more particularly claim the subject matter of Applicants' invention. Applicants also propose amending claims 19–22 to conform to claim 16, from which each depends. Applicants also propose canceling claims 2, 8, and 12 without prejudice or disclaimer of the subject matter contained therein.

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Rejection of claims 1, 3–5, 23, and 24

To establish a prima facie case of obviousness under §103(a), each of three requirements must be met. (1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine references or modify a reference. (MPEP § 2143.01.) (2) A reasonable expectation of success must exist that the proposed modification will work for the intended purpose. (MPEP § 2143.02.) Moreover, both of these requirements must "be found in the prior art, not in applicant's disclosure." (MPEP § 2142.) (3) The reference or references, taken alone or in combination, must disclose or suggest every element recited in the claims. (MPEP §2143.03.) If any one of these elements is missing, there is no prima facie obviousness case.

Hiroi discloses an electron beam exposure apparatus and method. The apparatus and method include scanning a reference target to detect two-dimensional image signals. (*Hiroi*, col. 43, lines 59–67.) An inspection condition corrector 27a calculates, *e.g.*, a dimension of the reference target based on the difference between the detected image signal and a known dimension of the reference target. (*Id.*, col. 44, lines 2–7.) An inspection condition setter 28 sends a change rate 264 of a feature value to a compensator 262, which compensates for the parameter read out according to the change rate 264 of the feature value. (*Id.*, col. 44, lines 17–30.)

An object of *Hiroi* is to reduce the difference between image signals detected by sensor 11 when the electron beam scans in the X direction (with respect to object 20) and when the electron beam scans in the Y direction. (*Hiroi*, Col. 14, ll. 41–46.) To do this, "it is necessary to set especially the acceleration voltage E of the electron beam

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used to irradiate the object and the electric field α on the object at proper values." (*Hiroi*, Col. 14, ll. 39–41.) This is different from proposed claim 1, which instead recites, "selecting the scan positions at random" and "rearranging the secondary electron detection signals in association with the scan positions." According to claim 1, when randomly selecting a scan position, charge is intentionally generated on the surface of a sample. This may also reduce the asymmetrical relationship between measurement values.

Although the Examiner alleges that scanning in X direction and Y direction discloses "scanning in an arbitrary scan order" (July 28, 2003 Office Action at 6), merely scanning in "the X direction and . . . the Y direction" (*Hiroi*, Col. 14, ll. 45–46) cannot result in selecting "scan positions at random," as recited in proposed claim 1. Intentionally charging a sample is required to select scan positions at random and may also reduce defects of the data to be observed being effected by the scan direction.

According to the proposed claim 1, the invention intentionally charges the surface of the sample by using a table that selects "the scan positions at random." *Hiroi*, on the other hand, reduces the charge involved with electron beam radiation and cannot select scan positions at random. While proposed claim 1 recites that scanning is carried out by selecting scan positions at random, *Hiroi* does not. Thus, *Hiroi* fails to disclose or suggest, "a table generating section for generating a table in which a scan order is associated with scan positions, *wherein the table generating section generates the table by selecting the scan positions at random according to the scan order*," as recited in proposed claim 1.

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Applicants also note that the Examiner does not appear to have addressed Applicants' May 12 Remarks that *Hiroi* fails to disclose or suggest:

> an image information generating section for rearranging the secondary electron detection signals in association with the scan positions on the basis of the table, thereby generating image information of a surface of the sample

as recited in claim 1.

Additionally, *Hiroi's* object of reducing the charge involved with electron beam radiation and reducing the yielded secondary electrons teaches away from a combination of elements including "an image information generating section," as recited in claim 1. (*See, e.g.*, column 13, lines 31–35, 41–46, and 59–65.)

Further, *Zhao* and *Hosono* fail to compensate for the deficiencies of *Hiroi*. *Zhao* discloses a method for protecting alignment mark trench walls and *Hosono* discloses an SEM for cross sectional observation of a semiconductor wafer. Neither, for example, discloses or suggests at least, "*wherein the table generating section generates the table by selecting the scan positions at random according to the scan order*," as recited in proposed claim 1.

The cited references fail to disclose or suggest each claim element. Consequently, there be no reasonable expectation of success in obtaining the claimed combination. Moreover, as noted above *Hiroi* teaches away from the Examiner's proposed modification of *Hiroi*. Thus, Applicants submit that claim 1 is allowable over the cited references. Similarly, claims 3–5, 23, and 24 are likewise allowable over the cited references at least because of their dependence from allowable claim 1. Withdrawal of the rejection of these claims is respectfully requested.

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Rejection of claims 11 & 13–15

For the reasons given above with respect to claim 1, combination *Hiroi*, *Hosono*, and *Zhao*, taken alone or in combination, fail to disclose or suggest each claim element recited in proposed claim 11, including at least, "*wherein the table is generated by selecting the scan positions at random according to the scan order, whereby the charged particle beam is made to scan the sample at random.*"

Applicants also note that the Examiner does not appear to have addressed Applicants' May 12 Remarks that *Hiroi* fails to disclose or suggest:

> rearranging the secondary electron detection signals in association with the scan positions on the basis of the table, thereby generating image information of a surface of the sample

as recited in claim 11.

Because a combination of these references fails to disclose or suggest each element of proposed claim 11 as obvious, there can be no reasonable expectation of success in obtaining the claimed combination. Thus, Applicants submit that claim 11 is allowable over the cited references, as are claims 13–15 at least because of their dependence from allowable claim 11. Withdrawal of the rejection of these claims is respectfully requested.

Rejection of claims 6, 7, 9,& 10

As discussed above with respect to claim 1, none of *Hiroi*, *Zhao*, and *Hosono* discloses or suggests intentionally charging the surface of the sample. A "first beam radiation area of the first radiation section . . . greater than a second beam radiation area of the second radiation section" cannot result without intentionally charging the surface of the sample. Thus, *Hiroi*, *Zhao*, and *Hosono* each fail to disclose or suggest,

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"wherein the first and second beam radiation sections include different beam sources, and *a first beam radiation area of the first radiation section is greater than a second beam radiation area of the second radiation section*," as recited in proposed claim 6. At best, *Hosono* discloses an apparatus for cross section observation. But this is completely different from the above recitation in proposed claim 6.

Applicants also note that the Examiner does not appear to have addressed Applicants' May 12 Remarks that *Hiroi* fails to disclose or suggest:

> ~~a first beam radiation section for performing a first charged~~ particle beam radiation on a sample in which *a pattern is formed on a substrate and a surface of the substrate including the pattern is covered with an insulating film* whose surface is flat including the pattern, and charging a surface of the sample,

as recited in claim 6.

Because a combination of these references fails to disclose or suggest each element of proposed claim 6, there can be no reasonable expectation of success in obtaining the claimed combination. Thus, Applicants submit that claim 6 is allowable over the cited references, as are claims 7, 9, and 10 at least because of their dependence from allowable claim 6. Withdrawal of the rejection of these claims is respectfully requested.

Rejection of claims 16–20

For the reasons given above with respect to claim 6, *Hiroi*, *Hosono*, and *Zhao*, taken alone or in combination, fail to disclose or suggest each claim element recited in proposed claim 16, including at least, "a third step of observing the pattern by detecting secondary electrons from the surface of the sample, *wherein a first beam radiation area*

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of the first charged particle beam radiation is greater than a second beam radiation area of the scanning of the charged particle beam."

Because a combination of these references fails to disclose or suggest each element of proposed claim 16 obvious, there can be no reasonable expectation of success in obtaining the claimed combination. Thus, Applicants submit that claim 16 is allowable over the cited references, as are claims 17–20 at least because of their dependence from allowable claim 16. Withdrawal of the rejection of these claims is respectfully requested.

Applicants respectfully request that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing claims 1, 3–7, 9–11, and 13–24 in condition for allowance. Applicants submit that the proposed amendments of claims 1, 6, 11, 16, and 19–22 do not raise new issues or necessitate the undertaking of any additional search of the art by the Examiner, since all of the elements and their relationships claimed were either earlier claimed or inherent in the claims as examined. Therefore, this Amendment should allow for immediate action by the Examiner.

Finally, Applicants submit that the entry of the amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.

In view of the foregoing remarks, Applicants submit that this claimed invention, as amended, is not rendered obvious in view of the references cited against this application. Applicants therefore request the entry of this Amendment, the Examiner's reconsideration of the application, and the timely allowance of the pending claims.

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Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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